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EXAMINER	
CHUO, TONY SHENG HSIANG	
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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/677,024
Filing Date: September 30, 2003
Appellant(s): ARTHUR ET AL.

Steven L. Nichols
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 7/8/08 appealing from the Office action mailed 4/14/08.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

JP 04-355953	ITO	12-1992
US 3,577,795	BENNETT	04-1971
US 6,677,069	PIASCIK et al	01-2004

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Ito (JP 04-355953).

The Ito reference discloses a method of dispersing stress by forming an interface between a components having different rates of thermal expansion (molybdenum plate “15” and copper plate “8”) such that when thermal expansion is induced by heating, a slide occurs at an interface between the plates “8” and “15” (See Abstract).

Examiner’s note: The Ito reference teaches forming an interface between two plates wherein a point on the interface is construed as being a center of growth.

Claims 1 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Bennett (US 3577795).

The Bennett reference discloses a method of forming an interface between components having different rates of thermal expansion (carbide blank “42” and steel shaft “44”) such that the interface between the components is aligned with the direction of the resultant thermal expansion so that one component slides upon the other component during such an expansion (See column 2, lines 10-14). It also discloses a method of determining the total resultant expansion of interface point "62" (center of growth) on the interface between abutting flanks “50” & “56”, wherein an increase in temperature results in sliding between the abutting flanks (See column 4, lines 16-65). It also discloses that if this method of performed with both carbide and steel raised to the maximum temperature expected in operation and then allowed to cool, the

assembly will automatically be capable of operating at that particular temperature without encountering unwanted interference (See column 4, lines 52-56).

Claims 1 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Piascik et al (US 6677069) in view of Bennett (US 3577795).

The Piascik reference discloses a radial solid oxide fuel cell stack “100” comprising components that have different rates of volumetric expansion such as cells “106” that are made of ceramic materials and interconnect layers “108” & “110” that are made of an metal sheets (See Figure 3 and column 7, lines 52-53, column 8, lines 48-58).

However, Piascik does not expressly teach a method of forming an interface comprising a step of forming an interface surface with respect to a center of growth such that slippage occurs at the interface between the components during volumetric expansion. The Bennett reference discloses a method of forming an interface between components having different rates of thermal expansion such that the interface between the components is aligned with the direction of the resultant thermal expansion so that one component slides upon the other component during such an expansion (See column 2, lines 10-14). It also discloses a method of determining the total resultant expansion of interface point "62" (center of growth) on the interface between abutting flanks “50” & “56”, wherein an increase in temperature results in sliding between the abutting flanks (See column 4, lines 16-65).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Piascik fuel cell to include a method of

forming an interface comprising a step of forming an interface surface with respect to a center of growth such that slippage occurs at the interface between the components during volumetric expansion in order to accommodate thermal expansions without subjecting the components to deleterious thermal stresses (See column 2, lines 31-34).

(10) Response to Argument

The appellant argues that the concept of "center of growth" has not been found in any prior art reference cited throughout the prosecution of this application; there is no other reference of record that teaches or suggests what a "center of growth" is as defined and claimed by the appellant; none of the prior art of record can teach or suggest how to determine a center of growth; and that this subject matter is found only in appellant's specification.

Firstly, the appellant is reminded that claims are given the broadest reasonable interpretation and that limitations appearing in the specification should not be read into the claim. The term "center of growth" is not defined in the claims.

Secondly, the appellant defines "center of growth" as a point at which two or more planes containing a portion of an interface or interfaces between two components intersect. The concept of "center of growth" as defined in the specification does not appear to be a valid definition because this concept is based on theory and not based on scientific fact. Since it is unclear where the two or more planes are located, a "center of growth" can be chosen as being any arbitrary point along an interface between two components.

The appellant further argues that Ito does not teach anything about the act of forming an interface. Rather, Ito merely describes an interface that has already been formed. In response, although Ito does describe an interface that has been formed, it also describes the concept of forming an interface between components having different rates of thermal expansion (volumetric expansion) such that slippage occurs at the interface between the components during thermal expansion.

The appellant further argues that Bennett cannot teach or suggest the claimed method in which a center of growth is first determined for a proposed interface between components so that the subsequent method step of “forming an interface surface of said interface” can then be performed "with respect to the center of growth".

As disclosed in Bennett, “When the assembly of FIG 4 is exposed to a temperature change the difference in the expansion coefficients of steel and carbide results in a differential expansion of the two components of the assembly” (See column 4, lines 12-15). Bennett further discloses that “… points 62, which are defined by the intersections of the midway arcs along which the width 2B is measured ...” (See column 4, lines 16-18). It is contended by the examiner that the interface points 62 can be construed as a “center of growth”. Therefore, Bennett implicitly discloses a “center of growth” even though it does not use the same terminology. By first determining the “center of growth” as disclosed in Bennett, the interface surface between components having different rates of thermal expansion can be determined with respect to the center of growth.

The appellant further argues that the differences between the cited prior art and the claimed subject matter are significant because appellant's claims provide a method of making an interface for a thermally cycled component assembly that minimizes or eliminates stress due to differential expansion rates of the components interfaced.

As disclosed in Bennett, "the interface between the components is aligned with the direction of the resultant thermal expansion thereat so that one component slides upon the other component during such an expansion" (See column 2, lines 10-15). Bennett further discloses that "Yet another object is to provide a method for broaching a carbide blank upon a steel member to produce an assembly which accommodates thermal expansions without being subjected to deleterious thermal stress" (See column 2, lines 31-34). Therefore, the Bennett reference teaches that same method of making an interface for a thermally cycled component assembly that minimizes or eliminates stress due to differential expansion rates of the components interfaced.

Regarding the 103 rejection of claims 1 and 9-11 as being unpatentable over Piascik and Bennett, the appellant argues that Piascik and Bennett do not teach or suggest Appellant's concept of center of growth and therefore cannot teach or suggest Appellant's method "comprising forming an interface surface of said interface with respect to a center of growth such that slippage occurs at the interface between said components during volumetric expansion." As shown in the reasons stated above, the Bennett reference does teach the same method of forming an interface surface of the interface with respect to a center of growth such that slippage occurs at the interface between the components during volumetric expansion. Therefore, the Piascik and

Bennett references do meet all of the limitations recited in claims 1 and 9-11. Since the appellant has not provided any evidence of non-obviousness of the cited prior art references, the examiner maintains the contention that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Piascik fuel cell to include a method of forming an interface comprising a step of forming an interface surface with respect to a center of growth such that slippage occurs at the interface between the components during volumetric expansion in order to accommodate thermal expansions without subjecting the components to deleterious thermal stresses.

In conclusion, although the appellant repeatedly argued that the cited prior art references do not teach the concept of “center of growth”, it is clear from the reasons stated above that the "center of growth" is an arbitrary point and is indeed taught by the cited prior art references.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner’s answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Tony Chuo

/Tony Chuo/

Examiner, Art Unit 1795

Conferees:

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